IN THE CLAIMS:

1. (Original) A rugged resonator for a laser, the resonator comprising:

a laser pump housing assembly, the laser pump housing assembly including:

a laser pump housing; and

a laser gain medium suitably mounted into or on the laser pump housing, the laser gain medium having a first and a second end;

a resonator assembly, the resonator assembly configured to receive and hold the laser pump housing, the resonator including:

at least four mirrors, a first, a second, a third, and a fourth mirror, the first mirror being configured to receive a first incident laser beam from the first end and to reflect a first reflected beam to strike the third mirror, the second mirror configured to receive a second incident laser beam from the second end and to reflect a second reflected beam to pass in proximity to the first reflected beam and to strike the fourth mirror; and

an intra-cavity optics plate assembly, the plate including:

an intra-cavity optics plate;

an output coupler, affixed to the optics plate and configured to receive a laser beam reflected by the fourth mirror; and

a high reflector, affixed to the optics plate and configured to receive a laser beam reflected by the third mirror.

2. (Original) The resonator for a laser of Claim 1, wherein the first reflected beam intersects the second reflected beam.

3. (Original) The resonator for a laser of Claim 1, wherein the intra-cavity optics plate includes a mechanical coupling between the optical coupler and the high reflector.

4. (Original) The resonator for a laser of Claim 1 further comprising an etalon affixed to the optics plate and configured to intercept the third reflected beam.

5. (Original) The resonator for a laser of Claim 1 further comprising a Brewster plate affixed to the optics plate and configured to intercept the third reflected beam.

6. (Original) The resonator for a laser of Claim 1 further comprising turning optics affixed to the optics plate and configured to intercept the fourth reflected beam.

7. (Original) The resonator for a laser of Claim 1, wherein at least one of the mirrors is configured to admit a pumping radiation.

8. (Original) The resonator for a laser of Claim 1, wherein the resonator assembly further includes an X-fold housing configured to receive and hold the mirrors in fixed relation.

9. (Original) The resonator for a laser of Claim 8, wherein the housing includes a monolithic block of material.

10. (Original) The resonator for a laser of Claim 9, wherein the material is a low expansion material.

11. (Original) The resonator for a laser of Claim 10, wherein the material is a glass ceramic.

12. (Original) The resonator for a laser of Claim 1, wherein the material is selected from a group consisting of Zerodur, BK-7, and fused silica.

13. (Original) The resonator for a laser of Claim 1, wherein the resonator is further configured for use in a lidar.

14. (Original) The resonator for a laser of Claim 13, wherein the Lidar is a part of a clear air turbulence indication system.

15. (Original) The resonator for a laser of Claim 1, wherein the resonator is further configured for use in a target illumination laser.

16. (Cancelled)

17. (Cancelled)

18. (Cancelled)

19. (Cancelled)

20. (Cancelled)

21. (Currently Amended) An X-fold resonator assembly, the resonator assembly configured to receive and hold the laser pump housing including a laser gain medium having a first and a second end, the X-fold and further configured to receive and hold an optics plate assembly, the resonator assembly including:

a first mirror, the first mirror being configured to reflect a first laser beam from the first end;

a second mirror, the second mirror being configured to reflect a second laser beam from the second end to intersect the first laser beam:

a third mirror, and the third mirror being configured to reflect the first laser beam from the first mirror to the optics plate assembly; and

a fourth mirror, and ~~third~~ the fourth mirror being configured to reflect the second beam from the second mirror and to the optics plate assembly.

22. (Original) The X-fold resonator assembly of Claim 21, wherein the X-fold resonator assembly further includes an X-fold housing configured to receive and hold the mirrors in fixed relation.

23. (Original) The X-fold resonator assembly of Claim 21, wherein the X-fold housing includes a monolithic block of material.

24. (Original) The X-fold resonator assembly of Claim 21, wherein the X-fold housing includes fused materials.

25. (Original) The X-fold resonator assembly of Claim 21, wherein the material is a low expansion material.

26. (Original) The X-fold resonator assembly of Claim 21, wherein the material is a glass ceramic.

27. (Original) The X-fold resonator assembly of Claim 21, wherein the material is selected from a group consisting of Zerodur, BK-7 and fused silica.

28. (Original) The X-fold resonator assembly of Claim 21, wherein at least one of the mirrors is configured to admit a pumping radiation.

29. (Original) The X-fold resonator assembly of Claim 21, wherein the laser pump housing is configured to admit a pumping radiation.

30. (Withdrawn) A method for constructing an X-fold optical resonator assembly; the method comprising:

forming a blank for boring defining a first receptacle for a laser gain medium and a second receptacle for an optics plate assembly and having a peripheral surface;

boring a first optical path from a site for a first mirror on the peripheral surface of the blank to the first receptacle;

boring a second optical path from the site for a second mirror on the peripheral surface of the blank to the first receptacle;

boring a third optical path from the site of the first mirror on the peripheral surface of the blank to the site of a third mirror on the peripheral surface of the blank;

boring a fourth optical path from the site of the second mirror on the peripheral surface of blank to the site of the fourth mirror on the peripheral surface of blank, the fourth optical path intersecting the third optical path at an angle;

boring a fifth optical path from the site of the third mirror on the peripheral surface of the blank to the second receptacle;

boring a sixth optical path from the site of the fourth mirror on the peripheral surface of the blank to the second receptacle.

31. (Withdrawn) The method of Claim 30, wherein the first, second, third, fourth, fifth, and sixth optical paths are coplanar.

32. (Withdrawn) The method of Claim 30, wherein the first and second paths are collinear.

33. (Withdrawn) The method of Claim 30, wherein the first and second paths are bored with a single stroke.

34. (Withdrawn) The method of Claim 30, wherein the fifth and sixth paths are collinear.

35. (Withdrawn) The method of Claim 30, wherein the fifth and sixth paths are bored with a single stroke.

36. (Withdrawn) The method of Claim 30, wherein the blank is a monolithic block formed of a rigid material.

37. (Withdrawn) The method of Claim 30, wherein the material is a low expansion material.

38. (Withdrawn) The method of Claim 30, wherein the material is a glass ceramic.

39. (Withdrawn) The method of Claim 30, wherein the material is selected from a group consisting of Zerodur, BK-7, and fused silica.

40. (Currently Amended) A method for resonating a beam from a laser gain medium, the method comprising:

receiving a first beam from a first end of the laser gain medium, the receiving a first beam including:

reflecting the first beam from a first mirror to a second mirror;

reflecting the first beam from the second mirror to a high reflector; and

receiving a second beam from a ~~first~~ second end of the laser gain medium, the receiving the second beam including:

reflecting the second beam from a third mirror to a fourth mirror, the second beam intersecting the first beam between the first and second mirrors; and

reflecting the second beam from the fourth mirror to a optical coupler.

41. (Original) The method of Claim 40, wherein the high reflector and the optical coupler are mechanically coupled.

42. (Original) The method of Claim 40, wherein the high reflector and the optical coupler are mechanically coupled to precision optical components.

43. (Original) The method of Claim 42, wherein the precision optical components includes a porro prism.

44. (Original) The method of Claim 42, wherein the precision optical components includes a Brewster plate.

45. (Original) The method of Claim 42, wherein the precision optical components includes a quarter-wavelength plate.

46. (Original) The method of Claim 42, wherein the precision optical components includes a half-wavelength plate.

47. (Original) The method of Claim 42, wherein the precision optical components includes a polarizer.

48. (Original) The method of Claim 41, further comprising:

directing the output of the optical coupler to a LIDAR transceiver section.

49. (Original) The method of Claim 41, further comprising:

directing the output of the optical coupler to a clear air turbulence indicator.

50. (Original) The method of Claim 41, further comprising:

directing the output of the optical coupler to a target illumination system.

51. (Original) The method of Claim 41, further comprising:

receiving a pumping radiation at the first mirror, the first mirror being configured to admit a pumping radiation.

52. (Original) The method of Claim 41, further comprising:

receiving a pumping radiation at the second mirror, the second mirror being configured to admit a pumping radiation.

53. (Currently Amended) The method of Claim 41, further comprising:

receiving a pumping radiation at the third mirror, the third mirror being configured to admit a pumping radiation. ~~(not very likely, path too long)~~

54. (Currently Amended) The method of Claim 41, further comprising:

receiving a pumping radiation at the fourth mirror, the fourth mirror being configured to admit a pumping radiation. ~~(not very likely, path too long)~~